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Cerebral infarction due to aortic dissection which developed immediately after traffic accident

In Japan, the number of forensic and clinical autopsies is extremely small compared with the other advanced nations. Consequently, postmortem radiography, computed tomography (CT), and magnetic resonance imaging (MRI) have been recently recognized as a substitute for autopsy (so-called autopsy imaging).[1] In the case described below, the manner of death was clinically diagnosed as natural death from the medical history of the cadaver and MRI and MR angiography (MRA) at admission, but forensic autopsy revealed that was probably accidental death.

An elderly male had suffered a traffic accident. He started to talk with the driver responsible after the accident; however, he collapsed suddenly in the act of talking, and fell into a deep coma. In hospital emergency, cranial MRI by diffusion weighted imaging showed a high intensity area in the cortex of the right cerebral hemisphere and of the longitudinal fissure side of the left cerebral hemisphere (Fig. 1a). Moreover, the intracranial segment of the right internal carotid artery was absent on MRA (Fig. 1b). Accordingly, he was diagnosed as early-onset cerebral infarction of right carotid artery due to thromboembolism. However, he died 25 h after the occurrence of the traffic accident.

Forensic autopsy showed two contusions: on the left precordial region and on the left side of the lumbar region externally. In accordance with these contusions, the left costicartilages and the left ribs were fractured, and there was hemorrhage on the anterior mediastinum. Moreover, Aortic dissection, the entry of which was the intimal fissure on the right wall of ascending aorta, was observed on the beginning of the aorta, which spread to the brachiocephalic artery, aortic arch and bilateral common carotid arteries, resulting in the obstruction of the true lumen (Fig. 2a–c). The cerebrum with stem and cerebellum weighed 1498 g, which was compatible with cerebral infarction on bilateral anterior and right middle cerebral artery territory, macro- and microscopically. The heart weighed 517 g with concentric cardiac hypertrophy. Bilateral coronary arteries had severe arteriosclerosis, resulting in old infracted lesions in the posterior wall of the left ventricle and ventricular septum microscopically.

Aortic dissection is an important emergency with high morbidity and mortality, and its incidence is estimated as 5–30 cases per million per year[2]; however, aortic dissection is rare as a cause of massive cerebral infarction.[3] Moreover, he had been under medication because of atrial fibrillation. It is thus considered that the physician diagnosed the cause of death and the manner of death as cerebral infarction due to thromboembolism and natural disease, respectively. Generally, in cases where the physicians have diagnosed as natural death, forensic autopsy tends not to be performed in Japan; nevertheless, forensic autopsy was performed in this case, and revealed that aortic dissection caused cerebral infarction. In consideration of the fact that the autopsy rate of traffic accident-related deaths is about 5%, even if a physician diagnoses the manner of death as natural death in such cases, we propose that postmortem diagnostic imaging must be performed on the

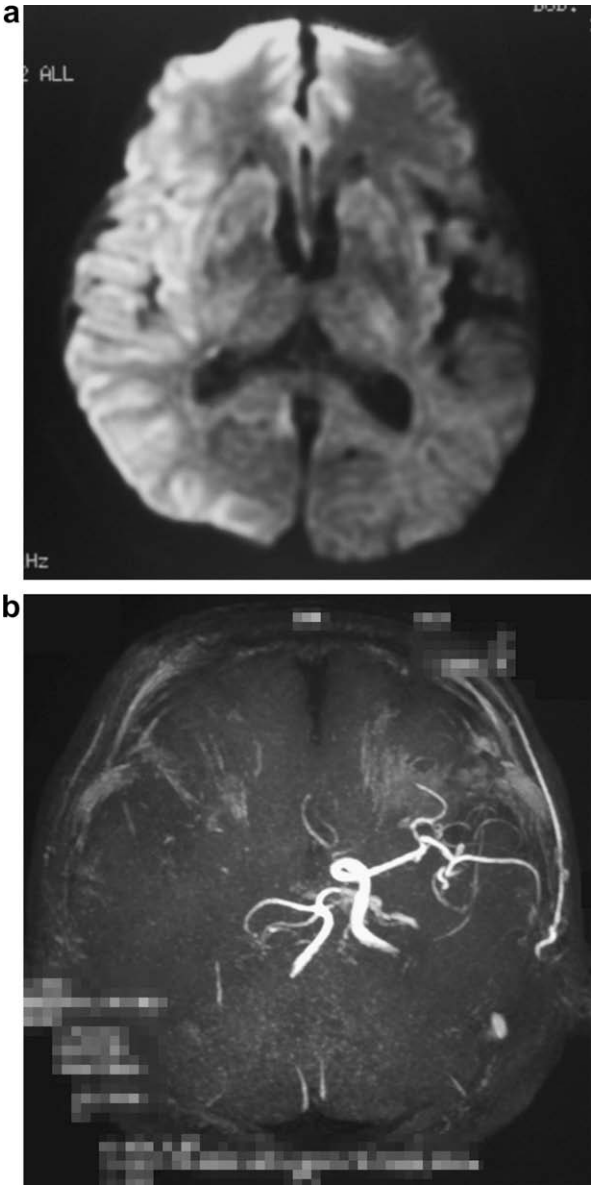

Fig. 1. Magnetic resonance (MR) imaging at admission. (a) Cranial MRI by diffusion weighted imaging. (b) Cranial MR angiogram.

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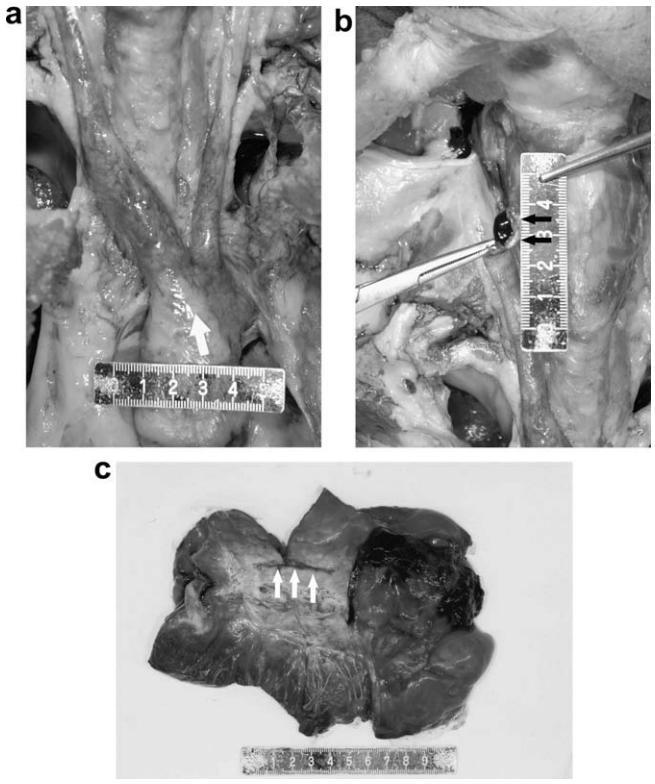

Fig. 2. Aortic dissection on ascending aorta. (a) Aortic dissection spreads to bilateral carotid arteries. (b) The true lumen of right carotid artery is obstructed by false lumen (black arrow). (c) The intima transversely fissures on right wall of ascending aorta (white arrow).

whole body, in order to make a precise diagnosis. Additionally, the postmortem imaging would also be of benefit for forensic autopsy as one of the complements in complete autopsy. Admittedly, it is debatable whether aortic dissection would have been caused by external force to the chest in the traffic accident, because the cadaver had severe arteriosclerosis in the aorta with concentric cardiac hypertrophy, though this is not relevant to the main subject of this letter.

Conflict of Interest

None declared.

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High rates of homicide are associated with high rates of homicide–suicide

Two recently published studies from South Africa have documented very high rates homicide–suicide. Jena et al. found an annual rate of homicide suicide of 1.0 per 100,000 per annum in Pretoria between 1997 and 2001[1] while Roberts et al. reported an annual homicide–suicide rate of 0.89 per 100,000 population in Durban between 2000 and 2001.[2] These rates are markedly higher than all but one of the 65 studies we located in a recent systematic review of the associations between rates of homicide, rates of suicide and rates of homicide–suicide (Fig. 1).[3] Hansen reported a rate of homicide suicide of 1.33 per 100,000 from Greenland in the mid 1970s at a time when the total homicide rate was 15.6 per 100,000 and the suicide rate was an extraordinary 45 per 100,000 per year.[4]

Our systematic review and findings of these studies with very high rates of homicide–suicide suggest that high rates of homicide–suicide are associated with high rates of homicide or, as in the case of Greenland high rates of both homicide and suicide. Coid,[5] Marzuk,[6] and Milroy[7] have all argued that rates of homicide–suicide are relatively stable between regions and are weakly associated with the overall homicide rate. However, this is contradicted by degree of variation in homicide–suicide between regions, an association between rates of homicide–

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